

Application No.: 10/590,010

REMARKS

This amendment is filed in response to the Office Action dated January 23, 2009. In view of these amendments and remarks, this application should be allowed and the case passed to issue. No new matter is introduced by this amendment. Support for the amendment to claim 7 is found in the specification at page 8, lines 13-15 and Fig. 4. The amendment to claim 8 is supported by originally filed claim 6. Claims 2-6 are amended to correct dependency and/or informalities.

Claims 2-10 are pending in this application. Claims 1-10 have been rejected. Claims 2-8 are amended in this response. Claim 1 is canceled in this response.

Claim Rejections Under 35 U.S.C. § 112

Claim 7 was rejected under 35 U.S.C. § 112, second paragraph, as being indefinite because it is not clear what a "W-type" cage is. This rejection is traversed, and reconsideration and withdrawal thereof respectfully requested.

Applicants submit that the claims, as amended, fully comport with the requirements of 35 U.S.C. § 112.

Claim Rejections Under 35 U.S.C. § 102

Claims 1-5 were rejected under 35 U.S.C. § 102(b) as being anticipated by Ikezawa et al. (US 5,630,668). The Examiner asserted that Ikezawa et al. disclose a thrust needle bearing employing lubricating oil having a rolling element held by a cage wherein the arithmetic average roughness Ra of the rolling element set to at least 0.3 micrometers and at most 0.15 micrometers. The Examiner did not find the end use of the bearing, as in claims 4 and 5, to be distinguishable. This rejection is traversed, and reconsideration and withdrawal thereof respectfully requested.

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Claim 1 has been canceled, thus the rejection of claim 1 is moot. Claims 2-5 have been amended to depend from claim 8. Ikezawa et al. do not anticipate the thrust needle bearing of claim 8 because Ikezawa et al. do not disclose the value of the arithmetic average roughness Ra of said rolling element is set to at least 0.03 μm and at most 0.15 μm , as required by claim 8. Applicants further submit that Ikezawa et al. do not suggest the claimed thrust needle bearing.

Claim Rejections Under 35 U.S.C. § 103

Claims 6, 7, 9, and 10 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Pitner (US 3,163,478). The Examiner averred that Pitner discloses a thrust needle bearing employing lubricating oil and having a rolling element (10) held by a cage (2) wherein a clearance exists between a pocket guide face of the cage and rolling element. The Examiner acknowledged that Pitner does not disclose the range for the clearance, but maintained that it would have been obvious to select a clearance within the claimed range for the desired purpose of allowing a lubricating wedge of oil to achieve the desired lubricating characteristics.

Claim 8 was rejected under 35 U.S.C. § 103(a) as being unpatentable over Pitner in view of Honda (US 5,456,538). The Examiner acknowledged that Pitner did not teach the claimed surface roughness range. The Examiner relied on Honda's teaching of a surface roughness being less than 0.6 micrometers for the purpose of reducing friction to assert that it would have been obvious to combine Honda with Pitner.

These rejections are traversed, and reconsideration and withdrawal thereof respectfully requested.

Independent claims 6 and 8 are not obvious in view of the cited references. Pitner, Honda, and Ikezawa et al., whether taken in combination, or taken alone, do not suggest the unexpected improvement in depth of wear of roller, 10 % life, and life ratio, as shown in Tables

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3 and 4 of the specification. The results achieved by the present invention are counterintuitive. The present invention is superior to thrust needle bearings having smoother surfaces, which is contrary to what one of ordinary skill in this art would have expected.

Claim 6 is further distinguishable over the cited references because the claimed clearance between a pocket guide face of the cage and the rolling element is not suggested. Pitner (column 2, lines 55-56) discloses, "the clearance which is necessary to allow for a lubricating wedge of oil." To provide this wedging effect, it is generally necessary that the clearance ratio (clearance between a roller and a pocket/the roller's diameter) is equal to or smaller than 0.002. For example, as described in the present specification in examples 1 and 2, for a thrust needle bearing with a roller having a diameter of Φ 3 mm, the clearance between the roller and a pocket required to provide the wedging effect must be equal to or smaller than 6 μ m. This value is at least about 10 times less than the 60-130 μ m clearance, as required by claim 6. In addition, the maximum hydraulic pressure caused by a wedging effect in the examples of the present specification is calculated to be approximately 0.4 MPa. The maximum hydraulic pressure to have a wedging effect under the same condition calculated for a clearance ratio of 0.002, on the other hand, is approximately 40 MPa, which is approximately 100 times the maximum hydraulic pressure obtained by examples in the present specification. Thus, it is apparent that Pitner's "clearance which is necessary to allow for a lubricating wedge of oil" is completely different from the clearance of 60-130 μ m, required by claim 6, and does not suggest the claimed clearance.

Claim 8 is further distinguishable over the cited references in view of the synergy achieved by the combination of the claimed rolling element smoothness and clearance between a

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pocket guide face of the cage, as explained in the specification in the paragraph bridging pages 8 and 9.

The only teaching of the claimed thrust needle bearings is found in Applicants' disclosure. However, the teaching or suggestion to make a claimed combination and the reasonable expectation of success must not be based on applicant's disclosure. *In re Vaack*, 947 F.2d 488, 20 USPQ2d 1438 (Fed. Cir. 1991).

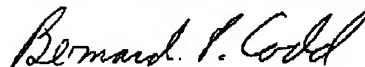
The dependent claims are allowable for at least the same reasons as independent claims 6 and 8 and further distinguish the claimed thrust needle bearings.

In view of the above amendments and remarks, Applicants submit that this application should be allowed and the case passed to issue. If there are any questions regarding this Amendment or the application in general, a telephone call to the undersigned would be appreciated to expedite the prosecution of the application.

To the extent necessary, a petition for an extension of time under 37 C.F.R. § 1.136 is hereby made. Please charge any shortage in fees due in connection with the filing of this paper, including extension of time fees, to Deposit Account 500417 and please credit any excess fees to such deposit account.

Respectfully submitted,

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